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THE JOURNAL OF GEOGRAPHY

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SUMMER SCHOOL COURSES IN GEOGRAPHY AND GEOLOGY, 1906

THE JOURNAL presents in this number a brief announcement of the courses in geography and geology to be given at colleges and normal schools during the coming summer, so far as the necessary information has been obtainable. For convenience of reference the grouping is by subjects.

ANTHROPO-GEOGRAPHY

University of Chicago, Chicago, Ill.

SOME Principles of Anthropo-geography. Dr. Ellen C. Semple. Various aspects of the relation between Geography and History. Grouping of the land masses and its effect; the importance of geographic location; the ocean highway and coast peoples; rivers and the river-lowland habitat; island and island peoples; mountain barriers and their passes; mountain agriculture; the isolating effect of a mountain environment; life in deserts and steppes. June 16-July 26.

American History and Its Geographic Conditions. This course will be based on Dr. Semple's book of the same title, and will be supplemented by lectures. June 16-July 26.

Social Origins. Associate Professor W. I. Thomas. Association and culture in early times and tribal life. Early food conditions, migrations and race-crossings. Origins and relations of invention, trade, warfare, art, marriage. Class distinctions, the professional, legal, political, and ecclesiastical institutions. Ethnological reading. An introductory course. June 16-July 26.

GEOGRAPHY OF THE ATMOSPHERE

University of Chicago, Chicago, Ill.

Meteorology and Climatology. Mr. Harlan H. Barrows. The principles of Meteorology and their application to the climate of the United States. July 27-August 31.

XUM

Indiana State Normal School, Terre Haute, Ind.

Meteorology. A study of the atmosphere, weather and climate. Principles of weather forecasting and construction and use of weather maps. Laboratory work and instrumental observation. July 2-Aug. 10.

GEOGRAPHY OF THE LANDS

The University of Chicago, Chicago, Ill.

Continental Evolution. Professor R. D. Salisbury. The history of the physical development of the North American continent, and its resources. Primarily for teachers. June 16-July 26.

Physiography. Professor R. D. Salisbury. The Earth's features treated with especial reference to their origin and significance. Agents effecting changes in geographic features. Physiographic processes in operation. Genetic geography. June 16-July 26.

Field Study (Second Course). Professor Salisbury and Dr. Alden. Advanced field work, involving the systematic investigation of a formation or an area. A formal report, as nearly as practicable in conformity with the approved standards of official geological reports, is required. The work may be prosecuted during the months of June, July, August and September. In all cases, the arrangements will be individual, and the fields will be selected according to the needs of the applicants. Former glaciation in selected mountain regions of the west, and the drift formations of eastern Wisconsin, will be the special topics. Each period of four weeks of field work, with a satisfactory report thereon, gives a credit of 3M. Prerequisites: *Courses 8, 15 and 16.* July 27-Aug. 31.

Cornell University, Ithaca, N. Y.

Physical Geography. Professor Dryer. A lecture course upon modern physical geography, including the lands, the seas, and the atmosphere. The development and systematic classification of the leading physiographic features will form the basis of the course. Some of the topics discussed are: rivers, plains and plateaux, shore-lines, mountains, volcanoes, glaciers and the glacial period; the ocean, its composition, movements and work; the atmosphere, general circulation, cyclones and special storms. The lectures will be fully illustrated by lantern slides. Students electing this course are advised to take also two related courses. July 5-Aug. 15.

Eastern Illinois State Normal School, Charleston, Ill.

Physiography. Miss Annie L. Weller. A study of land forms and the processes of their development. Work with topographic maps and in the field. June 18-July 27.

Illinois State Normal University, Normal, Ill.

The Land, the Ocean, the Atmosphere, Mathematical Geography. Mr. Sutherland. The study of the land will be a treatment of the processes by which the surface of the land has been shaped, and of typical land forms with reference to their origin, history, and influence upon man. Local field trips will be a part of the class work. At least one all-day excursion will be arranged for, probably on the first or second Saturday of the term. An explanation of the tides and of the cause and influence of the ocean currents will be treated. The principles which control weather and climate will be developed and applied in continental study. Daily weather observations will be made and recorded by each student. These observations will be summarized at the close of the term. The mathematical geography as outlined in the state course of study will be treated.

Maps, charts, and other publications of state and federal government will be used. The use of such publications in the elementary school and the method of obtaining them will be considered. June 11-Aug. 31.

Indiana State Normal School, Terre Haute, Ind.

Physiography. The description and explanation of land forms. Examination of type forms in the field. Study of common minerals and rocks, and interpretation of maps in the laboratory. July 2-Aug. 10.

University of Missouri, Columbia, Mo.

Physiography. F. V. Emerson. A course of study in the principles of physiography as illustrated in the physical features of North America. The subject will be taken up from the point of view of the needs of the high school teacher of physiography, and will include the subject-matter as well as the equipment necessary for presenting it. The work will consist of laboratory and field work with occasional lectures and conferences.

Physical Geography. F. V. Emerson. This is a course of study in general physical geography, covering the ground of the average high grade textbook. It will be presented as a lecture, library, and laboratory course and may be taken as a preparation for more advanced geographic work or for teaching the subject in high schools.

Iowa State Normal School, Cedar Falls, Ia.

Physiography. This course is of advanced grade, giving the modern views in regard to geographical work. A study will be made of land forms, the changes they are undergoing and the agencies affecting these changes. Topographic maps will be used and frequent field trips taken. (Miss Knudsen.) June 10-July 21.

XUM

University of Minnesota, Minneapolis, Minn.

Physical Geography. Modern views on the common problems of physical geography will be presented. Subjects considered: phenomena of weather and climate; rock weathering, rivers and river valleys with their successive stages and their relation to agriculture and commerce; plains and plateaux,—origin and structural relations and their varied economic features. Also mountains and volcanoes,—mountain-building, crustal displacements, ore deposits; glaciers,—the glacial period and glacial results in Minnesota. June 19-July 31.

New York University, New York City

Physiography. Principal McFarlane. This course is designed to meet the needs of teachers and all others who wish to become more fully acquainted with the physical features of the lands. The lectures will touch upon: (a) The conditions of their origin: (b) The conditions of their development: (c) Their distribution. In the selection of examples especial attention is paid to our own country.

Ohio State University, Columbus, Ohio

Physical Geography. Professor Hubbard. A practical course in modern physical geography, covering the origin, development, and classification of land forms, with some work on the atmosphere and the ocean. Some of the topics treated are, rivers, valleys, plains, mountains, shore-lines, glaciers; the ocean and its work; the atmosphere, its circulation and special storms.

Regional Geography. Professor Hubbard. A course designed primarily for teachers of geography in the grades and in normal schools. The work is based upon a study of a good number of typical regions selected from the various continents and from them is extended to cover the world. The relation of man and the physical conditions will be the theme in each study. The purpose is to work out the life conditions in the several regions and to discover the relations of each region to others. June 25-Aug. 3.

Syracuse University, Syracuse, N. Y.

Physical Geography based on the Regent's Syllabus and adapted to the needs of teachers and entrance students. Dr. C. H. Richardson. July 5-Aug. 16.

Yale University, New Haven, Conn.

Physiography. Professor H. E. Gregory and Mr. I. Bowman. This course will include the principal topics of Physical Geography: The earth's shape, the oceans, the forms of the land, and weather and climate. The

part these factors have in systematic geography will be suggested from time to time.

Harvard University, Cambridge, Mass.

Physical Geography. G. R. Mansfield. Designed for teachers in secondary and normal schools. July 5-Aug. 15.

FIELD AND LABORATORY COURSES

University of Chicago, Chicago, Ill. (*School of Education*)

Field Geography. Associate Professor Zonia Baber. This course will furnish a basis for teaching geography and physiography. A trip will be made to Old Point Comfort, Va., with stops at points of special geographic or historic interest in the Allegheny plateau, Appalachian Mountains, Piedmont and Coastal plain. July 27-Aug. 31.

University of Chicago, Chicago, Ill.

Field and Laboratory Course. Mr. T. McD. Hills. Study of the geography and geology of Chicago and vicinity, and of relief, topographic, and geologic maps. The course will include two field trips (one on Saturday), and three laboratory exercises (or lectures), weekly. For teachers and for those who wish to learn methods of field work. Prerequisite: *Physiography*. First Term; 1:30-3:30.

NOTE.—Students taking this course should take no other afternoon course.

Cornell University, Ithaca, N. Y.

Laboratory Course in Physical Geography. Professor Dryer. This course includes both subject-matter and methods. Although the course is arranged primarily for teachers in high schools, yet it is so planned as to be of advantage to grade teachers who anticipate teaching geography in the high school. The laboratory equipment used in the course consists of numerous models, charts, and maps; much attention, however, is given to the possibilities open to teachers in schools having limited laboratory equipment. So far as possible the work offered will be arranged to meet the individual needs of teachers; where desired by a teacher, personal suggestions will be made regarding the local field work he may carry on with his classes. Among the specific topics treated are the following: the interpretation and use of topographic maps; study of typographic maps and models illustrating type land forms; the assembling and mounting of topographic sheets into useful type maps; physiographic influences; the use of photographs; common rocks; weather maps. July 5-Aug. 15.

Field Course in Physical Geography. Professor Dryer and Supervisor Whitbeck. One afternoon each week and two Saturday all-day excursions

are devoted to the study of physiographic phenomena in the field. In this field work a study is made of river valley forms, both young and mature; waterfalls; lakes; and typical glacial deposits, including moraines, drumlins, kames, eskers, and overwash plains. July 5-Aug. 15.

Michigan State Normal College, Ypsilanti, Mich.

Field Geography. Professor Jefferson. There are two aims in this work:—(1) to help teachers to recognize the geographic features of the landscape, and (2) to plan the use of these out-door forms in teaching with a text-book. June 25-Aug. 3.

GENERAL GEOGRAPHY

University of Chicago, Chicago, Ill.

Principles of Geography. Mr. Harlan H. Barrows. The meaning and scope of geography; the relation of geography to other subjects; the distribution and characteristics of land forms and climate; the distribution and utilization of natural resources, such as soils, minerals, plants and animals, with reference to man's distribution and industrial and social development; an application of the principles developed to the interpretation of type regions. July 27-Aug. 31.

Columbia University, New York City

General Geography. Miss Kirchwey. Lectures, discussions, and reference work with laboratory demonstrations. An introductory course in the elements of mathematical and physical geography designed to acquaint students with the modern point of view in geography, as well as to give them an understanding of the essential facts and principles of mathematical and physical geography necessary for a teacher of geography in the various grades of the elementary school.

The following subjects will indicate the general scope of the course: the shape, size and motions of the earth and their effects; the continents with special reference to the study of the principal land forms and the work of rivers; the oceans with emphasis on tides and ocean currents; the atmosphere in regard to the distribution of temperature, winds and rain over the world. Application will be made to North America throughout the work, so as to show the dependence of continental study upon these fundamental principles. July 5-Aug 16.

Cornell University, Ithaca, N. Y.

Geographic Influences and Relations. Supervisor Whitbeck. Lectures and studies designed to show the influence of physiographic and climatic conditions upon human activities: the influence of soil, coast-line, moun-

tains and valleys, plains and plateaux, gaps and passes, winds, rainfall, ocean currents; geographical causes leading to the location and growth of cities, the location and migration of industries; man's reaction upon his environment and his conquest of natural obstacles. July 5-Aug. 15.

Drake University, Des Moines, Ia.

General Geography. Prof. Clarence E. Nickle. Course in facts. A comprehensive knowledge of the principal points in the field of geography may be secured. Physical geography will be considered in the course of general geography. The end of this course shall be to supplement the general knowledge of teachers and to prepare them for state examinations.

Iowa State Normal School, Cedar Falls, Ia.

General Geography. (A)—Two weeks will be given to a review of physical geography. On this as a basis the United States will be studied, special attention being given to its physiographic divisions and the effect of the physical features on the industrial life in the different regions. A special study of Iowa will be made. (Miss Knudsen—IV., Miss Aitchison.)

Geography. (D)—The beginning work in general geography. This consists of elementary mathematical and physical geography, the work being taken up much more fully than in course A. Some field work will be done. (Miss Aitchison.)

Geography. (E)—The second half of general geography. This will consist of a more detailed study of the United States than is given in course A; also a study of Europe. Special attention will be given to physiographic features of the country and the industrial life of the people. Some time will be spent in studying Iowa as a type of the prairie state. (Miss Aitchison.) June 10-July 21.

University of Minnesota, Minneapolis, Minn.

Elementary Geography. Mr. Hall and Mr. Ball. This section will be adapted to the needs of those who wish to carry on a study of geography for general information and as a preparation for teaching grade geography. The subjects considered will be the physiographic features of the earth in their geographical bearing; products and their distribution, and a study of the principal industries of the globe. Field work will be a part of this course. Full course, two periods each day.

Advanced Geography. Mr. Hall and Mr. Ball. This section will contain those who have taught, or have studied it somewhat extensively. The subject-matter will comprise a more advanced study of the physical features, climate, animal and mineral resources of type regions, and their effect upon the development of these type regions along industrial and eco-

XUM

nomic lines. Field work is open to those registered in this course. Half course, one period each day. June 19-July 31.

University of Nebraska, Lincoln, Neb.

Physical Geography. Associate Professor Condra. A course for persons preparing for the state examinations, or to teach this subject or review-geography in the high school. It consists of lectures with lantern views, models, maps, specimens and the reflectoscope, and of laboratory experiments, library reading, and field excursions. Local excursions are made to points of interest near the University, and longer excursions on Saturday to Roca, Louisville and South Bend. The subjects treated are about the same as those outlined in any one of the modern physical geography texts. Approved methods of teaching the subject are emphasized. Laboratory fee, $1.00. Five hours attendance. Laboratory, library and excursions. June 11-July 20.

New York University, New York City

General Geography. Principal McFarlane. This course is especially designed to meet the needs of those who wish a systematic and thorough review of general geography. It furnishes an excellent preparation for those who desire to teach geography in the grades.

The course includes a consideration of the elements of mathematical and physical geography, with especial emphasis upon climate, and shows how considerable is the influence which these exert in determining the character and distribution of life forms and the industrial and commercial activities of man.

Western State Normal School, Kalamazoo, Mich.

Physiography A. Mr. L. H. Wood. (1) Mathematical geography and meteorology. (2) Land forms and oceanography. Laboratory work one hour a day. Six weeks.

Physiography B. Rural School Course. Mr. L. H. Wood. (1) Mathematical Geography and Meteorology. Six weeks. (2) Land forms and oceanography. Six weeks. Laboratory work one hour a day.

Geography. General Principles. Mr. L. H. Wood. Prerequisite: Courses in physiography or the regular high school course in physical geography.

State Normal School, Winona, Minn.

General Geography. Professor E. M. Lehnerts. Course I. (a) The fundamental facts and principles of mathematical and physical geography and their relation to the distribution of life and industries of man are

considered, the work being made as concrete as possible by means of apparatus, problems, experiments, and out-of-door observations. (B) A study is made of the western hemisphere, with special emphasis on the geography of the United States. Twice daily.

Course II. The countries of the eastern hemisphere are studied in detail, and their commercial relations with the United States are given special attention. For high school graduates this course will be supplemented by some study of methods of teaching the subject in the grades. Twice daily. June 19-Aug. 1.

Physical Geography. Professor E. M. Lehnerts. The course includes: 1. Land forms, and the agents and processes which have produced them; the birth, growth, and decay of river valleys, mountains, plains, coast-lines, and other geographic forms. 2. The properties, movements, and work of the atmosphere and of the ocean; climate and weather; scientific weather forecasting. 3. Principles underlying the distribution of plant and animal life; the influence of the physical environment on man. Twice daily. June 19-Aug. 1.

University of Wisconsin, Madison, Wis.

General Physiography. Professor A. P. Brigham. Five hours a week for six weeks. Lectures, collateral reading and excursions.

INDUSTRIAL AND COMMERCIAL GEOGRAPHY

University of Chicago, Chicago, Ill.

Industrial History of the United States. Mr. Robert Morris. An inquiry into the causes of the industrial expansion of the country, with some reference to European conditions. The class will visit a number of industrial establishments in and near Chicago.

Illinois State Normal University, Normal, Ill.

Commercial Geography. Mr. Ridgley. The world in its relation to man as a producer and trader. Thorough study will be made of some of the great industries. A number of these industries will be illustrated by series of museum specimens. Excursions will be made to local industries. These studies will indicate method of treatment of similar topics in both grammar and high school grades. More time will be given to the United States than to any other country, but the leading countries of each continent will be treated. Much library reading will be required. Relief maps will be made.

This course will be especially helpful to teachers who feel the need of a wider knowledge of the subject-matter of geography. June 11-Aug. 31.

XUM

Iowa State Normal School, Cedar Falls, Ia.

Commercial Geography. Miss Aitchison. A study of the natural conditions affecting commerce, routes and means of transportation and the natural resources and industries of the United States. A comparative study will be made of the resources and industries of foreign countries. June 10-July 21.

University of Minnesota, Minneapolis, Minn.

Industrial Geography. A course in the world's industries, particularly as exemplified in North America. Climate and topography in their influence upon human migrations and activities will be first emphasized. The soil in its physical and chemical composition and origin will then be discussed and its relations to forests, prairies and plains will be considered. The food supply of the world will be discussed; the origin of the various cereals and other foods will be pointed out and an historical sketch giving their growth in favor. The rock and mineral products of the earth and their utilization in the construction of homes, public buildings and in engineering enterprises and their adaptation to the luxuries of living will be touched upon. Trade routes marketing the products of labor and commercial activities as related to latitude, topography, proximity to the sea, and industrial communities will receive attention. June 19-July 31.

University of Nebraska, Lincoln, Neb.

Industrial Geography. Associate Professor Condra. There is an increasing demand for teachers of Industrial and Commercial Geography in the high schools. This course is planned to prepare teachers for such instruction and to cover as much of the subject as possible in six weeks. It is to treat the principal mineral, plant, and animal industries of the United States. Commercial movements and the commercial relations of products also will follow. Five hours attendance. Lectures and library; excursions to the principal industries of Lincoln. June 11-July 20.

Yale University, New Haven, Conn.

Commercial Geography. Professor A. G. Keller, and Messrs. Bishop and Bowman. This course is a general study of the relation of man to his environment. Climate, soil, topography, and other physiographic elements will be treated as conditioning factors of the production and distribution of goods destined for the satisfaction of human wants. Distribution of the materials of commerce, foods (and their physiological values), clothing, building materials, etc. Conditions of transportation: natural water-routes, winds, ocean currents, harbors. Complementary trade-areas, trade-routes and their historical importance. Direct influence on man, as a pro-

ducer and consumer, of the natural environment: climate (acclimatization), topography, flora and fauna, etc. Race characters and race distribution; the geography of disease, etc.

GEOGRAPHY OF PLANTS AND ANIMALS

University of Chicago, Chicago, Ill.

Elementary Ecology. Dr. Henry C. Cowles. Plants in relation to their environment. Field work in the greenhouses, parks, and vacant grounds near the University, with occasional laboratory exercises and field trips to the country. June 16-July 26.

Ohio State University, Columbus, Ohio

Plant Culture and Animal Study. Professor Burkett. A study of how plants feed and grow, supplemented with simple experiments, all to be prepared by teachers as a part of regular instruction. The many sides of plant culture will be considered so that the teacher can interest the pupils in numerous ways, all having a practical application to agriculture.

The same plan will be followed in studying animal life. The soil, the plant, and the animal have a direct relation to each other, deserving the most careful thought and study. Since children love animals, they can easily be taught to observe and study them, and thus lay the foundation for larger study and the acquisition of most useful knowledge. The teacher will be shown ways and methods of preparing simple exercises in the school room and school yard that will not only be of great practical value, but will also interest and delight the pupils to the fullest degree. June 25-Aug. 3.

Western State Normal School, Kalamazoo, Mich.

Plant and Animal Geography. Mr. L. H. Wood. In this course the work is intended to give students a foundation for the study of economic and industrial geography so far as they depend upon the distribution of these organisms or the products of value derived from them.

GEOGRAPHY OF CONTINENTS AND COUNTRIES

Eastern Illinois State Normal School, Charleston, Ill.

The Geography of Eurasia. Miss A. L. Weller. Its physiographic regions, climatic conditions, resources and industries, with emphasis placed upon surface conditions as influencing human institutions. June 18-July 27.

Illinois State Normal University, Normal, Ill.

A Study of the United States. Mr. Sutherland. An introductory view of the continent, followed by a careful study of the United States by physiographic and industrial regions, and summarized by a review show-

ing interrelations of the different regions and the relation of the whole to the outside world. Much library reading will be required. Relief maps of North America and the United States will be made.

This course is of especial value to teachers of the grammar grades.

A Study of Europe, and Mathematical Geography. Mr. Wetzel. This course includes a study of the continent as a whole to determine its physiography and natural resources; a careful study of the physical and human geography of the more important countries; an examination of the most interesting phases of life in the minor ones; and a summary of the whole from the point of view of the industries.

Observational work and the graphic representation of the facts presented will be the special features of the mathematical geography.

Michigan State Normal College, Ypsilanti, Mich.

General Geography of the Continents. Professor Jefferson. A course of lectures will take up the physical features that seem to exercise most evident control on the distribution of man, and the social and political reactions of men to the control, with especial reference to the geography of Michigan.

Geography of American History. Professor Jefferson. The course will seek to show the part that geography has played in making our country what it is, that teachers may make the action of history more vivid by better realization of the scenes in which it has occurred. Brigham's Geographic Influences in American History will be used in part as a text, and the work illustrated by the college collection of maps and models. Students will be shown how to prepare wall maps and diagrams for class use. June 25-Aug. 3.

Indiana State Normal School, Terre Haute, Ind.

Geography of the United States. A study of the physiographic regions of the United States in relation to economic products and human occupation. Manufactures, transportation and commerce. Source, movement and growth of population. Location and development of cities. Map drawing on mathematical projections. A well equipped laboratory and an ample and carefully selected list of reference books facilitate the work in this department.

The summer term furnishes a favorable opportunity for city grade and high school teachers who have but a limited vacation period at their disposal to study this science in relation to its recent material and pedagogical progress. July 2-Aug. 10.

XUM

Northern Illinois State Normal School, DeKalb, Ill.

Geography. Miss Knudsen. This course is intended for graduates of country schools. It will discuss the general relief forms of the continents, comparisons of the continents, political divisions, commercial relations, and will include map drawing and modeling. June 24-Aug. 2.

University of Nebraska, Lincoln, Neb.

Geography of Nebraska and the Great Plains. Associate Professor Condra. A careful survey of the geography of Nebraska and a more general treatment of the bordering states. The course is suited to students both of geography and of agriculture. The aim is to supply information which is not accessible to many teachers. Topographic maps, U. S. Geological Survey bulletins, folios, water supply papers, state reports and the instructor's field notes serve as a basis of library reading. The subjects are as follows: surface appearance, structure, weather, climate, drainage, principal rivers and valleys, ground water, topographic regions, soil areas, mineral resources, water resources, agricultural resources, reclamation schemes, settlement and development, and the cities and towns. The lectures are illustrated by a large number of lantern slides and reflectoscope views. It will be possible for each person taking this course to work up an outline of the geography of his home region. Laboratory fee, $1.00. Five hours attendance. Laboratory, library and excursions. June 11-July 20.

Western State Normal School, Kalamazoo, Mich.

Geography of the Western Hemisphere, North and South America. From these continents typical regions will be selected to illustrate the principles of geography.

University of Wisconsin, Madison, Wis.

Physiography of the United States. Professor A. P. Brigham. Two hours a week for six weeks.

Lectures, collateral reading and excursions.

THE TEACHING OF GEOGRAPHY

University of Chicago, Chicago, Ill. (*School of Education*)

The Teaching of Geography in the Grammar Grades. Associate Professor Zonia Baber. Continental Study. Eurasia. June 16-July 26.

The Teaching of Geography in the Primary Grades. Associate Professor Zonia Baber. A study of type topographies, climates, and life through human industries. June 16-July 26.

Geographic Drawing and Chalk-Modeling. Mr. Georg Thorne-Thomsen. Blackboard sketching of typical surface features: plains, valleys,

mountains, glaciers, canyons, shore-features, etc.; cross-sections and pictorial representations of large sections of continents, as plateaux, river basins, and mountain systems; chalk-modeled relief maps. The work will be done on paper as well as on the blackboard.

First Term; 11:30. Repeated; 1:30.

Columbia University, New York City

The Teaching of Geography. Lectures, conferences and library work. Miss Kirchwey. A consideration of the course of study in geography for elementary schools and of the general principles underlying good geography teaching. Work will be made as practical as possible, with much discussion of the best method of presenting to children the difficult problems met in the various grades. Each student will outline some special topics, adapted to the grade or grades of interest to him. Class criticism and discussion of these topics, outlined as lesson plans suited to certain grades. July 5-Aug. 15.

Cornell University, Ithaca, New York

Home Geography. Mr. Farnham. Conversations and studies designed to show what the elements of home geography are; when and how they may be presented. To this end excursions will be made to fields, shops, and local industries. How such excursions may be made with classes of children will be discussed. The value of pictorial teaching will be illustrated. Occupations modified by seasonal weather will be noted. The relation of home geography to the geography of regions beyond the pupils' horizon will be considered. July 5-Aug. 15.

The World as a Whole. Mr. Farnham. A series of globe lessons introduced by a consideration of well-known and important commodities used to meet human needs. These lessons illustrate climatic influence on plants, animals and human activities. The use of raw material and manufactured products to Home Geography and to later studies will be traced. July 5-Aug. 15.

Studies of North America. Mr. Farnham. The seven great human industries. Subject-matter, method of treatment, use of specimens, pictorial illustrations, maps, and use of text-book discussed and illustrated. Ideas gained from Home Geography and from lessons on the world as a whole furnish a basis for the first treatment of North America.

The movement from North America to the other continents is discussed at length. In combination with the previous courses this will give a full survey of the whole elementary course in geography.

Aims and Problems in Geography. Supervisor Whitbeck. Designed

more particularly for grammar school teachers. The course consists of lectures, discussions and exercises dealing with the actual problems of the class room. Some of the topics treated are: the chief aims in teaching geography; the relative value of different kinds of geographical knowledge; methods of conducting the recitation; the proper use of the text-book; the use and misuse of supplementary books; map modeling, map drawing, and the use of outline maps; use of pictures; field and factory trips; simple laboratory exercises; simple methods of teaching the earth's movements, the tides, etc.

Round Table Conference in Geography. There will be several evening conferences for instructors and students in geography, at which discussions of important general topics in connection with geography will take place. Some topics discussed in previous years were Nature and Scope of Geography, Principles Determining the Course of Study in Geography, Excursions and Laboratory Work in Geography, Sources of Geographic Knowledge.

Attendance on this course is purely voluntary and cannot be counted for University credit; but such free interchange of views among teachers and students is expected to throw much light on problems of teaching and on working methods. July 5-Aug. 15.

Drake University, Des Moines, Iowa

Education. Professor C. E. Nickle. In the course of methods the correlations of geography with other subjects will be discussed. How to teach, what to teach, when to teach and where to teach particular subjects will be emphasized especially.

Excursions to representative industries of Des Moines will be taken and field lessons will be given. The region of Des Moines is remarkably adapted to the study of coal beds, glacial deposits, river valleys and flood plains. Lectures will be illustrated with a stereopticon. Laboratory work will be offered.

Eastern Illinois State Normal School, Charleston, Ill.

Illinois State Course of Study in Geography. Miss A. L. Weller. Lectures daily based upon the outline of material in the State Course. June 18-July 27.

Illinois State Normal University, Normal, Ill.

Method in Geography. Mr. Ridgley. This course includes a study of material for the grades and its logical organization. Home geography, field work, observational work, and type studies from various continents selected from the work of different grades will be studied from the teacher's

XUM

point of view. Field lessons will be a part of the class work. Much library reading will be required. Instruction will be given in the selection and preparation of pictures and museum specimens for school use. Relief maps will be constructed by each student.

This course is especially designed for teachers of primary and intermediate grades.

Geographical Type Studies. Mr. Wetzel. A detailed study of typical industrial, desert, and scenic centers, and a general view of a continent. Comparison of each type-area, with other similar areas. The purpose is to find out: (a) The control of man by conditions; (b) man's modifications of his physical environment; (c) the choice of geographical material and the order of its presentation as controlled by the interest of the child, his power, the locality, and the educational value of the subject-matter. June 11-Aug. 31.

Michigan State Normal College, Ypsilanti, Mich.

Teachers' Geography. Mr. Davis. This course is designed to prepare students for teaching geography in the public schools, as far as its subject-matter is concerned. It deals with the nature and use of maps, and the study of teaching of weather and climate. June 25-Aug. 3.

Northern Illinois State Normal School, DeKalb, Ill.

Geography. Miss Grace Knudsen. The chief aim in these courses in geography is to present geographical material in an organized form. The dependence of human institutions upon the physical condition of the earth, its surface topography and constitution, is the principle upon which the organization is based. The further aim in these courses is to present, first, the principles that govern the selection and arrangement of the material for the grades; second, the use of helpful devices such as illustrative drawing, chalk modeling, pictures, maps and field excursions; third, the use of the text-book and the library.

1. Home Geography; a brief study of the common physiographic features and their relation to the life of man.

2. The earth as a whole; motions of the earth and their effects; motions of air and water.

3. Selected type-studies. June 24-Aug. 2.

New York University, New York City

Method in Geography. Principal McFarlane. In this course a special effort will be made to prepare teachers to handle work in Geography for the elementary grades as outlined in the Elementary Syllabus recently issued by the New York State Education Department. Aside from this,

however, the course will include lectures on the method and material of Geography and its place in the school curriculum.

Geology

University of Chicago, Chicago, Ill.

Field Geology, First Course (outside of Chicago). Dr. W. W. Atwood. This course is intended to form an introduction to the more specialized professional courses that follow, and to furnish a basis for the teaching of Geography, Physiography, and elementary Geology. It involves training in stratigraphic, glacial, and other field determinations, together with mapping, sketching, and technical description. The field is the vicinity of Devil's Lake and the Dells of the Wisconsin, in Wisconsin. Four weeks will be spent in the field, commencing June 18. The preparation of a report will complete the course.

Harvard University, Cambridge, Mass.

Geology. Mr. J. W. Eggleston. An elementary lecture, laboratory and field course in Dynamic and Structural Geology. July 5-Aug. 15.

State University of Iowa, Iowa City, Iowa

Geographic Geology. Professor Calvin. This is a course intended to meet the needs of those who expect to teach physical geography and geology in high schools. It will include a study of the origin of the physical features of the earth, the agencies of geographical development and change, and an outline of historical geology. Large use will be made of illustrative materials, including rocks and mineral specimens, models, maps, photographs and lantern slides. Field excursions on Saturdays are included in the course. June 18-July 28.

Geology of Iowa. Professor Calvin. A course in the geology of Iowa is offered to students who are registered for course I, or who have previously had an amount of work in geology equivalent to course I. It is the purpose of this course to pay especial attention to the geological structure and history of our own state, the areal distribution of our geological formations, their characteristics and uses, and the conditions under which they were deposited. The economic minerals of Iowa will be considered, together with the geographical and geological positions in which they occur. The rocks, minerals and typical fossils will be illustrated by specimens selected from the geological collections of the University, and photographs and lantern slides will be made to aid in the presentation of the subject. The publications of the Iowa Geological Survey will be used for reference, and the work of the lecture room and laboratory will be supplemented by excursions in the field. June 18-July 28.

XUM

Michigan State Normal College, Ypsilanti, Mich.

Minerals and Rocks. Professor Sherzer. This is a practical study of the more common minerals and rocks, particularly those of economic importance. Bulk material is furnished to the teacher for study and he is assisted in making a small private collection. Blow-pipe methods and simple chemical manipulation will be acquired. Field trips will be made as often as needed for the collection of local material and the week end excursions will afford opportunity for collecting from more distant localities. No previous knowledge of geology or chemistry is presupposed.

Physiographic Geology. Professor Sherzer. An elementary study of those geological agencies which are now at work in modifying the surface of the earth, in order that the pupil may understand how these agencies have operated in past time. The course will cover the mechanical and chemical action of the atmosphere, the geological effects of ice and running water, the various organic agencies in our ponds, lakes and seas, and the phenomena due to the internal heat of the earth. The course will consist of library work and lectures, illustrated with photographs, models, specimens and lantern slides. June 25-Aug. 3.

The University of Minnesota, Minneapolis, Minn.

The Elements of Geology. This subject will be treated under the following subdivisions:

a. Geodynamics—air, water and vulcanism as sources of energy, with a discussion of the phenomena traced to them; the destructive and reconstructive effects of these forces will be considered.

b. The principal minerals will be described, (1) rock-forming, (2) economic interests in their relation to industries.

c. The architecture of the earth, the aggregation of minerals into rocks by the various processes of rock building; the aggregation of minerals into rocks and the principles of metamorphism.

d. Historical geology—the facts and phenomena of living beings and the results of their existence on the earth. June 19-July 31.

Syracuse University, Syracuse, N. Y.

Dynamical and Structural Geology. Dr. C. H. Richardson. This course embodies the principles of general geology and is designed for those wishing to make college credit and for teachers in the secondary schools desiring a broader knowledge of the subject, with training in field and laboratory work. July 5-Aug. 16.

XUM

MIAMI UNIVERSITY, MAY 1906 LIBRARY.

THE GEOGRAPHY COURSE IN THE OSWEGO STATE NORMAL AND TRAINING SCHOOL

BY AMOS W. FARNHAM
Oswego, N. Y.

PART IV

THE WORK OF THE GRADES (Continued)

Fifth Grade: North America and Eurasia (first treatment)

BY "first treatment" we mean the study of human industries as determined by earth environment. Children of this grade are more familiar with human industries than with related earth conditions. They often play a minor part in such industries. Our great industries are effects, each resulting from certain earth causes. Young children are more interested in what has happened than in what caused it to happen. Hence in the first study of North America the human element is emphasized, but the earth element and their inter-relations are not overlooked.

NORTH AMERICA

After lessons on the world as a whole, a systematic study of the continents is begun, taking the continent of North America first. This is our home continent. It is first located on a large globe, then on Mercator's Map of the World; afterward a map of North America, in relief, is placed before the class. Lake Ontario is found, the Oswego River is noted, and Oswego is located. The position of Alaska is reviewed, also its direction and distance (in units of time) from Oswego, its climate is recalled and climatic effects on life are stated. (That Alaska is under our flag is not overlooked.) A similar review of Mexico is had. Children note the direction of Mexico and Alaska from each other. Compare their climates, also compare each with the climate of Oswego. Children recall what useful articles we get from each of these regions, and state why we cannot provide ourselves with these commodities within the limits of our own environment.

We now study that part of North America that lies between Alaska and Mexico, that part that takes in our own home (Oswego). The remaining political divisions, the United States, Canada, and incidentally the Central American republics, are located and their boundaries are traced.

Of all the great industries agriculture is one of the oldest, the most important, the most honored. It supplies us with our leading food products, as well as with the most important materials for our clothing. Every gar-

XUM

den plot, no matter how small, may illustrate the necessary conditions for both possible and successful cultivation of plants. Hence:—

A. Agriculture.

I. Wheat culture.

Illustrative material: Specimens of wheat bread, brown bread, crackers, shredded wheat biscuit, macaroni; white flour, whole wheat flour; wheat threshed and unthreshed. Picture of a field of wheat.

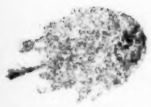
Note.—More than one-third of the earth's inhabitants are wheat-bread eaters.

1. Location of wheat regions of North America. Wheat thrives best between the parallels of 25° and 55°.
   a. Valley of the Red River of the North.
      (Minnesota, North Dakota, Manitoba.)
   b. The Central States.
      (Ohio, South Dakota, Kansas, Indiana, Nebraska, Missouri, Iowa, Michigan, Illinois, Oklahoma, Kentucky, Texas, Tennessee, Wisconsin.)
   c. The Atlantic States.
      (Pennsylvania, New York, Maryland, Virginia.)
   d. The Pacific States.
      (California, Washington, Oregon.)
   e. Canadian Wheat Region.
      (From Lake Winnipeg to the Rocky Mountains.)

   Which is the largest of these wheat regions? Which is the smallest? Which regions are in our own country? Which are in Canada? Which are nearest to Alaska? Which are nearest to Mexico? Which is nearest to the sea? Which is farthest from the sea?

   Note.—In each group the states are named according to rank in wheat production as reported in the Twelfth Census. The seven leading states are Minnesota, North Dakota, Ohio, South Dakota, Kansas, California, Indiana. Indiana produced 35,000,000 bushels, Minnesota produced 95,000,000 bushels. In 1900 the United States produced 500,000,000 bushels of wheat, and therefore led the wheat producing countries of the world.
2. Conditions favorable for wheat culture.

a. Slope; long, gentle, and generally southward. Note effect on drainage, insolation, and ease of cultivation.
b. Soil; fine, deep, rich in plant food.
c. Temperature; the temperature of the different wheat regions varies, hence different kinds of wheat are sown in them; spring wheat and winter wheat and different varieties of each.
d. Rainfall; moisture equivalent to an annual rainfall of twenty inches is necessary for wheat growing. When this amount is not supplied naturally, farmers resort to irrigation. Show pictures of irrigating ditches and reservoirs, and of irrigated fields, found in geographies and government reports.



Read, A Visit to a Great Wheat Farm, in Carpenter's *North America.*

3. Great Wheat Centers. Reasons for their existence; also reasons for the location of the following named wheat centers: Minneapolis, St. Paul, Winnipeg, Montreal, Quebec, Chicago, Milwaukee, St. Louis, San Francisco, Portland (Ore.).

Children locate all wheat centers on maps in their geographies, stating: Minneapolis is a city in the State of Minnesota, on the Mississippi River, etc.

Study Minneapolis and St. Paul in detail, compare others with them.

Minneapolis is a railroad center in the midst of the greatest of the wheat regions, at the head of navigation of the Mississippi River, on the falls of St. Anthony which afford great water-power. The Pillsbury Mills of Minneapolis have a capacity of 60,000 barrels of flour a week. Note this reading, "Pillsbury's Best," on sacks of flour in your grocer's store. If your mother uses this brand of flour, ask her to save for you the leaflet that she finds in the mouth of the next sack. See what you can learn from it about flour making in the Pillsbury Mills.

4. Ports from which our wheat is shipped. New York (the leading export city), New Orleans, Galveston, Baltimore, Philadelphia, San Francisco, Tacoma, Portland (Ore.).

In what state and on what water is each export city?

5. Transportation routes, both water and rail, from wheat

centers to export cities. Note that much wheat is shipped in the form of flour.

Children trace all routes with care, naming in order all connecting waters and all trunk lines of railroads.

6. Foreign ports to which our wheat is shipped.

Liverpool, Hamburg, Christiania, Havre, Havana, Yokohama, Shanghai.

In what country and on what water is each named foreign port?

From what region do we send wheat to Yokohama and Shanghai?

Trace ocean routes from our wheat export cities to the foreign ports where wheat is sold. Why are these foreign countries dependent upon our wheat crop? Reasons for this dependence, also for our ability to supply them.

What does each of these countries furnish us in return? Why do we not produce these commodities ourselves? Note density of population of wheat region and reasons for same.

II. Corn Culture.

Illustrative material: Specimens of corn meal and corn starch; corn shelled and in the ear, husked and on the stalk. Picture of a field of corn.

Note.—Next to wheat, corn is the chief bread-stuff on the American continent. Corn is the staple grain of Mexico. The "tortilla," the national bread of the Mexicans, is a corn-meal wafer baked on hot slabs of stone.

1. Location of corn regions of North America.

Corn thrives best in regions having long summers and warm nights.

a. The Central States.
(Illinois, Iowa, Kansas, Nebraska, Missouri, Indiana, Ohio, Kentucky, Tennessee, Wisconsin, Minnesota, Michigan, Arkansas, Oklahoma, South Dakota, Indian Territory.)

b. The Gulf States.
(Texas, Mississippi, Alabama.)

c. The Atlantic States.
(Pennsylvania, Virginia, North Carolina, Georgia, New York, Maryland, South Carolina.)

Which is the largest of these corn regions? Which is the smallest? Which is the farthest from the sea? Which is nearest to the sea?

Note.—In each group the states are named in the order of importance as corn states. The seven leading states are the first seven named in the Central States. In 1900 Ohio produced nearly 155,000,000 bushels, Illinois produced almost 400,000,000 bushels.

In 1898 the United States produced more than 2,100,000,000 bushels of corn, being four-fifths of the world's crop. Although Austria-Hungary holds second place among the corn producing countries of the world, she produced only a little over 100,000,000 bushels.

2. Conditions favorable for corn culture.
   a. Slope, similar to that for wheat.
   b. Soil, as for wheat.
   c. Temperature, higher than for wheat.
   d. Rainfall, greater than for wheat, and yet the growing crop is easily injured by too much rain.

   Note.—By far the greater part of our corn crop is consumed where it is grown, being used to fatten hogs and cattle.
3. Slaughtering and meat-packing regions.
   a. Central States.
      (Illinois, Kansas, Nebraska, Indiana, Missouri, Iowa, Ohio, Wisconsin.)
   b. Atlantic States.
      (New York, Massachusetts, Pennsylvania, New Jersey, Maryland.)
   c. Pacific States.
      (California.)

   What relations do these meat-packing regions bear to the corn regions of our country? Which is the largest of the meat-packing regions? Which is the smallest? Which region is most densely settled?

   Note.—In each group the states are named in the order of importance as meat-packing states. The seven leading states are Illinois, Kansas, Nebraska, New York, Indiana, Missouri, Massachusetts.

XUM

In 1900 the value of this industry in Illinois alone was nearly $275,000,000; in Maryland about $10,000,000. Read, Indian Corn and the Corn Belt, in Carpenter's *North America.*

4. Slaughtering and meat-packing centers.
Chicago, Kansas City (Kans.), South Omaha, New York, St. Joseph (Mo.), East St. Louis (Ill.), Indianapolis, Somerville (Mass.), Milwaukee, St. Louis, Philadelphia, Buffalo, Cincinnati.
In 1900 Chicago's meat-packing industry exceeded $255,000,000; Cincinnati's about $10,000,000.—*Twelfth Census.*
A great quantity of the meat-packing products of these centers is consumed in our own country.
Ask your butcher from what local "cooler" he buys his meats. Find out what packing house supplies the local "cooler," and where this packing house has its headquarters. It is probable that this packing house indirectly supplies your butcher with nearly every kind of meat (fresh, salted, canned, etc.) found in his market, poultry excepted.
There are four coolers in Oswego representing respectively Armour and Co., Swift and Co., Schwartzschild, Sulzberger and Co., and the Omaha Packing Company. The first three have their central plants in Chicago; the last one has its central plant in South Omaha.
An excursion to a local cooler.
There is practically no waste in a packing house. Even the sweepings are utilized. There is a special use and commercial value placed on hair, horns, hides, hoofs, bones, blood, bladders, intestines and their contents, as well as flesh, fat, and other portions used for food.
The market value of a pound of corn is about one-third of a cent; converted into pork or beef, however, it is worth five or six times as much.
By feeding the corn to stock, therefore, a farmer may turn an unmarketable product into one for which there is a steady demand.—Redway's *Commercial Geography.*
It must be said that a very large part of the corn crop is used annually in the manufacture of distilled liquor.

5. Ports from which our meats are shipped.

New York, Boston, Philadelphia.

In what state and on what water is each export city?

6. Transportation routes, both water and rail, from meat-packing centers to export cities.

Children required to trace all routes intelligently.

7. Foreign ports to which our meats are shipped.

Liverpool, Hamburg, Antwerp, Trieste.

In what country and on what water is each named foreign port? Trace ocean routes from our meat export cities to the foreign ports where our meats are sold. Why are these countries compelled to buy meats, and why are we able to sell to them? What do we get in exchange for our meats, and why do we not supply ourselves with these commodities?

Of the corn and wheat regions, which extends farthest north? which farthest south? Which states rank both as corn and wheat states?

Review wheat and corn culture in the lecture-room with lantern slides.

III. Cotton culture.

Illustrative material: Specimens of cotton in the boll; cotton seeds, pictures of the cotton plant and of a cotton plantation; samples of cotton goods, colored and uncolored, varying greatly in fineness and weight; samples of cotton lace and thread.

1. Location of the cotton regions of North America (where the crop exceeds home consumption).

Cotton is grown in the United States south of the thirty-seventh parallel and east of the hundredth meridian.

Locate this region on the map.

a. The Gulf States.

Texas, Mississippi, Alabama, Louisiana, Florida.

b. The South Central States.

Arkansas, Tennessee, Missouri.

c. The South Atlantic States.

Georgia, South Carolina, North Carolina, Virginia.

Where are the cotton regions with regard to the corn regions? With regard to the wheat regions? Compare the area of the cotton region with that of the corn region; with that of the wheat region.

2. Conditions favorable for cotton culture.

XUM

a. Slope; long, gentle, southward.
b. Soil; fine, deep (river flood-plains).
c. Temperature; long season of warm days in the subtropics. Cotton also thrives best near the coast.
d. Rainfall; a good degree of moisture is needed.

3. Great cotton centers. Reasons for their existence, also reasons for the location of the following named cotton centers: Galveston, Mobile, New Orleans, Savannah, Charleston.

Children locate all cotton centers on maps in their geographies, stating, "Galveston is a city in the State of Texas, on the Gulf of Mexico," etc.

In 1899 our cotton crop was equivalent to 9,434,345 500-pound bales.

The five leading states were Texas, Mississippi, Georgia, Alabama, and South Carolina. Texas produced 2,600,000 five-hundred-pound bales; South Carolina produced 850,000 five-hundred-pound bales. Our best cotton, known as sea-island cotton, is raised on the islands off the Carolina coast.

4. Ports from which our cotton is shipped.

(From each named cotton center. New Orleans is the largest cotton market of the United States.)

5. Foreign ports to which our cotton is sent.

Manchester, (England buys one-third of our annual cotton crop), Hamburg, Cologne, and Christiania.

Trace ocean routes from our cotton-export cities to the foreign ports where our cotton is sold.

Why are these foreign countries dependent upon our cotton crop?

Reasons for this dependence and also for our ability to supply them.

What does each of these countries furnish us in return? Why do we not produce these commodities ourselves?

How does the population of the cotton regions compare in density with the population of the corn regions? Account for the difference.

Review cotton culture in lecture-room with lantern slides.

B. Grazing.

The highest civilization is attainable only by a combination of agriculture and stock-raising.—*Dryer.*

I. Neat cattle.

1. Location of states whose farms and ranges support one million or more of neat cattle.

a. The Central States.
Texas, Iowa, Kansas, Nebraska, Illinois, Missouri, Wisconsin, Ohio, Minnesota, Oklahoma, Indiana, South Dakota, Indian Territory, Michigan, Kentucky.

b. The Atlantic States.
New York, Pennsylvania.

c. Rocky Mountain States.
Colorado, New Mexico, Montana.

d. Pacific States.
California.

e. Southern Canada.

Which of these regions is the largest? The smallest? Which states are included in the corn regions? In the meat-packing regions?

The seven states that lead in the number of neat cattle on farms and ranges are Texas, Iowa, Kansas, Nebraska, Illinois, Missouri, New York. New York has over two and one-half millions (a large number), but Texas has nearly nine and one-half millions. In New York and some other states the cattle are raised chiefly for dairy products; in Texas and some other states they are raised chiefly for meat products.

The five states leading in value of dairy products are New York, Wisconsin, Iowa, Illinois, Pennsylvania.

In 1900 Pennsylvania's dairy products exceeded in value $10,250,000; New York's dairy products exceeded $26,500,500.

What conditions enable New York to lead in this industry? Where is this enormous yield of dairy products consumed?

2. Conditions favorable for cattle ranges.

a. Natural pasturage (bunch grass).

b. Water supply.

c. Mild winters with little or no snowfall.

C. Lumbering.

Outside the food-stuffs, probably no other material is more generally used by human beings than the products of the forests. More people

are sheltered by wooden dwellings than by those of brick or stone, and more people are warmed by wood fires than by coal. Even in steam-making a considerable power is still produced by the use of wood for fuel.—*Redway.*

Illustrative material: Specimens of different kinds of woods used in house building and furniture making. It is well to have specimens of equal dimensions, then pupils readily note differences in weight, hence in density (hardness). Call attention to the color and graining. Note the fitness of the different woods, each for its particular use.

I. Location of lumber regions.

1. Canada. South of the fiftieth parallel.
2. Central and Atlantic States. North of the thirtieth parallel and east of the ninety-fifth meridian.
3. Pacific States.

In the year 1900 the value of the lumber and timber products exceeded $20,000,000 in each of the following named states: Wisconsin, Michigan, Minnesota, Pennsylvania, Washington, Arkansas, Ohio, and Indiana. Wisconsin's product somewhat exceeded fifty-seven and one-half millions.

Canada's annual product reaches $80,000,000.

What kind of lumber is largely produced in each of the eight leading states? What kind in Canada? What is the principal use of each kind?

How are the indeciduous members of the pine family fitted for the cold and snows of their habitat?

What kind of lumber is used at the Diamond Match Factory? At the Box Shop? Why best adapted for these purposes? Where produced?

What kinds of lumber are used in our manual training shops? What things are made there of pine? Oak? Redwood? Whitewood? Source of each.

The lumbering industry reviewed in lecture-room with lantern slides.

D. Mining.

I. Coal, iron, copper, gold, silver, granite, sandstone, limestone, marble, clay, slate, petroleum.

The work is elaborated and outlined similar to the work on each of the preceding industries.

E. Fishing.
Cod, banks of Newfoundland; mackerel, near the shores of eastern Canada and the north Atlantic States; oyster, Long Island Sound and Chesapeake Bay; salmon, Columbia River and Yukon River; seal, Pribilof Islands in Bering Sea; whale, off the shores of northern Alaska.

F. Manufacturing—reviewed.

G. Commerce—reviewed.

H. Scenic Centers.

I. Adirondack Mountains.

1. Location.
2. Extent.
3. Appearance.
   a. Mountains; form, height.
   b. Forests; size, kinds of trees.
   c. Lakes; number, size, form, origin.
   d. Streams; number, size, velocity.
   e. Camps; "open," inclosed.
   f. Blazed trails.
   g. Hotels and guides.
   Note.—Magazine pictures, souvenir postal cards, and "snap-shots" used in class.
4. Hygienic and aesthetic value of this region.
   a. Conditions for rest and recreation.
   b. Health-giving atmosphere.
   c. Facilities for the study of, and development of love for, nature.
   Read Bryant's Forest Hymn.
   Illustrated talks in the lecture-room.
   Note.—In a similar manner study the Catskills, Thousand Islands, Yellowstone Park, etc.

EURASIA

The reasons for studying Eurasia next after North America are obvious. People from Eurasia discovered, explored, and settled North America. Our commercial interests are largely with Eurasian nations. The thousands of emigrants coming annually to our shores are almost wholly from Eurasia. The adults fill our factories and mines, and their children crowd our schools.

Eurasia is first located on a large globe, then on map of the world

(Mercator's projection), afterward a map of Eurasia, in relief, is placed before the class.

The Eurasian countries studied in the fourth grade (Lessons on the World as a whole) are reviewed as to location, climate, and climatic effects on life. Children recall what useful articles we get from each of these countries.

The first treatment of Eurasia is similar to that of North America.

A. Agriculture.

I. Wheat culture.

1. Location of wheat regions.

Note.—Review conditions found favorable for wheat culture in our own continent. From relief maps select regions adapted for wheat culture in regard to slope, soil, temperature, and rainfall.

a. Southern Russia and Southern Siberia.
b. France.
c. India.
d. Austria-Hungary.
e. Germany.
f. Italy (Po Valley).

Compare these regions with regard to size, temperature, rainfall. See temperature and rainfall maps of the world in Longmans' *New School Atlas,* late edition.

Compare the wheat regions of Eurasia with the wheat regions of North America as to latitude. Note variations in climate and topography, and their effects upon wheat growing.

Compare density of population of Russia with that of western Europe. As a result of comparison show that western Europe must buy wheat. Buys of Russia and the United States.

Germany consumes her entire wheat crop in about six months; Great Britain, in about three months.

2. Great wheat centers. Reasons for these centers, also for being where they are. Odessa, Bombay, Budapest, Dantzic, St. Petersburg.

Locate these cities on maps in geographies.

3. Transportation routes from wheat regions to wheat cen-

ters. Note in order the lines of railroads, the canals, and navigable rivers.

Children trace routes with care.

4. Foreign ports to which Russia, India, and Austria-Hungary send their surplus wheat in bulk or ground into flour. France sells a part of her wheat crop to Great Britain, and then buys of Russia to fill the deficiency. Russia sells nearly all of her wheat crop to the countries of western Europe.

Trace the routes from wheat centers to foreign ports. Name in order all waters crossed.

II. Flax culture.
Russia, Belgium, Ireland, Germany.

III. Mulberry (*morus alba*) culture (the silkworm).
China, Japan, Italy, Turkey, France, Spain.

IV. Grape culture (raisins, wine).
France, Italy, Spain, Portugal, Turkey-in-Europe.

B. Grazing.

C. Lumbering.

D. Mining.

E. Fishing.

F. Manufacturing and commercial centers.

Glasgow, Manchester, Leeds, Birmingham, Sheffield, Belfast, Paris, Ghent, Geneva, Zürich, Lyons, Tokio, London, Liverpool, Southhampton, Hamburg, Christiania, Copenhagen, Genoa, Budapest, Cologne, Havre, St. Petersburg, Bombay, Calcutta, Canton, Hong Kong, Yokohama.

In what country and on what water is each of these cities? For what manufacture is each noted? What are the leading imports and exports of each? Pupils answer these questions from their geographies.

G. Scenic centers.

I. The Alps.

Note.—Forty million dollars annually spent by tourists in Switzerland.

II. The Rhine.

III. The Lake regions of the British Isles.

Note for what each scenic center is remarkable, and what the attractions are for tourists.

(*To be continued.*)

REVIEW

METHODIK DES UNTERRICHTS IN DER ERDKUNDE. Ein Hilfsbuch für Seminaristen und Lehrer von Heinrich Fischer, Breslau, Ferd. Hirth. 1905.

THE student of foreign methods of teaching will find this little book very interesting reading. While it is true that each country develops its own system of education which is adapted to its own needs and could not be transplanted into another country where conditions may be entirely different, a study of the ways in which the educators of the various countries try to overcome the special difficulties which confront them is always helpful and may suggest to us in a certain degree how to overcome our own. The book has been written for the instruction of students and young teachers of geography, and the first, general part, with its advice how to become a good teacher of geography, will not fail to benefit readers of any nationality. The second and more special part is given to the discussion of the practical problems connected with the details of the course in geography, and here the American will probably note most of all, the emphasis laid on map work in preference to text-book study. If he sees the educative value of these exercises, he cannot fail to become an ally of those who are working to establish a higher standard of excellence for the cartographic productions of this country. On the other hand it is comforting to see that even in a country where the place of geography in higher and lower education has so long been recognized, the author should feel that it is still too young a science for having developed a definite methodology. Dr. Fischer's book will no doubt prove a very important contribution toward the attainment of this goal.—M. K. G.

RECENT PUBLICATIONS

THE BRITISH COLONIES AND THEIR INDUSTRIES. By Wm. P. Gresswell; second edition, pp. 191; George Philip & Son, London, 1905.

A second edition of a useful little book dealing with the Commercial geography of the British Colonies. Considers the leading products and their preparation for the market in an interesting way.

AN ELEMENTARY CLASS BOOK OF PHYSICAL GEOGRAPHY. By William Hughes, revised by R. A. Gregory; pp. 118; George Philip & Son, London, 1905.

A very brief and much condensed summary of the elements of physical geography and the geography of plants and animals.

A DICTIONARY OF ALTITUDES in the United States. Fourth edition, compiled by

Henry Gannett; Bulletin 274, U. S. Geological Survey, pp. 1072; Government Printing office, 1906.

A valuable book of reference showing altitudes determined by authoritative surveys.

TEACHERS' GEOGRAPHY. A Syllabus and Note Book, Maps and Climates with 31 Practical Exercises. By Mark S. W. Jefferson, Michigan State Normal College, 1906.

Outline of a Teachers' Course of twelve weeks given in the Michigan State Normal College, with maps, diagrams, and necessary note paper. The exercises are well chosen, well expressed, and valuable for giving training in using maps and in understanding climates.

Not designed as a complete laboratory guide for the subject, but merely arranged for a course that must of necessity be very brief and to the point.

THE WORLD WIDE ATLAS of Modern Geography. 128 plates and index. W. and A. K. Johnston, Edinburgh and London, seventh edition, 1906.

An excellent reference atlas for a school library. Contains many inset maps of cities and ports. Each continent shown physically, politically and by sections. One of the few school atlases published in England and treating the United States adequately.

AN ATLAS OF COMMERCIAL GEOGRAPHY. Edited by R. Ferguson Savage; 36 plates and index; W. and A. K. Johnston, Edinburgh and London, 1906.

The maps of world showing climate, surface, communications, distribution of vegetable, animal and mineral products are especially valuable for use in commercial geography.

ARTICLES IN CURRENT GEOGRAPHICAL MAGAZINES

TRANSPORTATION METHODS IN ALASKA, George S. Gibbs. *National Geographic Magazine,* February, 1906.

An interesting illustrated account of methods of travel in Alaska, especially in winter.

WINNING THE WEST, C. J. Blanchard. *National Geographic Magazine,* February, 1906.

A summary account of the development of the chief irrigation project now in progress or recently completed in the west. Strikingly illustrated.

MOROCCO, THE LAND OF THE EXTREME WEST, Ion Perdicaris. *National Geographic Magazine,* March, 1906.

An entertaining and illuminating account of Morocco and the experiences of the author while held captive and waiting for a ransom. Illustrated by many full page and several smaller views showing lives of people and their homes.

OUR HETEROGENEOUS SYSTEM OF WEIGHTS AND MEASURES, Alexander Graham Bell. *National Geographic Magazine,* March, 1906.

An account of the difficulties of using our present systems of weights and measures and of the reasons for adopting the metric system. Should be read by all who are in doubt on this matter.

THE HISTORY OF THE GEOGRAPHY OF SCOTLAND, Sir Archibald Geikie. *Scottish Geographical Magazine,* March, 1906.

Illustrated by characteristic views of existing features and by a series of eight maps showing the distribution of land and water at different ages.

NOTES

PHYSICAL GEOGRAPHY IN THE SECONDARY SCHOOLS.—Teachers of Physical Geography all over the country will be interested in the Syllabus on that subject prepared for the secondary schools of New York State. This appears in Bulletin 27 on Secondary Education, issued November, 1905, by the New York State Education Department. Some nineteen pages are devoted to an outline of the class exercises, laboratory and field work. It is intended that the matter presented shall represent a satisfactory second year course designed to meet the college entrance requirements in Physical Geography, but provision is made for a somewhat more advanced fourth year course by inserting additional matter in small type.

I have recently made a careful comparison between several of the leading text-books on Physical Geography and the New York syllabus. To any one who has glanced over the syllabus it is needless to say that no one of the texts presented a consideration of all the topics given in the outline. Indeed, there were notable omissions in each text. This was to be expected, for while it is stated that "the plea that particular text-books are deficient will not be accepted in extenuation of inadequate knowledge," attention is called to the fact that "it will be quite impossible for any one class in the time allotted to study exhaustively all the topics mentioned, and no one text-book would furnish the material for such exhaustive study." Examination questions are so arranged that the student prepared upon a proper proportion of the topics should pass without difficulty.

It is only natural, however, that teachers should want a text which treats as many as possible of the topics given in an authoritative syllabus, and that publishers should desire authors to meet the requirements of such syllabus as nearly as possible. It becomes of more than ordinary interest, therefore, to see what kind of a standard is set up by the syllabus of the New York State Education Department in this subject. Several points suggested by somewhat detailed study are here presented.

One is impressed, perhaps most strongly, by the modern methods of treatment and the thoroughness required. Surely a wonderful advance over former methods and subject-matter is marked by the standard now set for the New York schools. The rational element in geography is more strongly emphasized, the empirical treatment has the smaller place to which it is properly entitled. As to thoroughness, it would seem that the ground is as well covered as is possible in an elementary course. Indeed, it may well be asked if too large a mass of details is not prescribed. Granting

that the student is not held responsible for all matter covered by the syllabus, it would still seem that a gain in effectiveness might be had by omitting certain topics difficult of explanation to elementary classes, or which involve details of small importance as compared with the general scope of the outline. Regarding arrangement of topics, it is inevitable that every teacher and every author should desire certain modifications to suit his personal ideas as to logical sequence: and this is as it should be. The syllabus aims to indicate the ground to be covered, not to impose any barrier to a proper exercise of freedom in the order of presentation of the subject.

In the details of the outline one sees a number of points which he would like to change. In discussing the structure of the earth, the terms centrosphere, lithosphere, hydrosphere, as correlative of atmosphere, are of doubtful utility, and while occasionally found in text-books, are apt to give the student erroneous ideas, especially regarding our lack of knowledge of the earth's interior. Referring to rivers, old age is not the only stage of river development characterized by flood plains, meanders and ox-bow lakes, deltas and the conditions favorable to delta formation, as the syllabus would lead one to believe. Since the constructive action of ice is presented so fully as to include a discussion of moraines, drumlins, kames, eskers, and till plains, it would seem well to include some mention of those more striking features due to the destructive effects of ice, such as cirques, U-shaped valleys, lateral hanging valleys, fiords, etc. Other similar suggestions will occur to those who read the syllabus with care.

There would seem to be no excuse for the combination of errors and unfortunate selection of matter presented as classifications of rocks, on page 143. Think of a classification of rocks that groups sand and pebbles together with amethyst, chalcedony, sard, carnelian, onyx, sardonyx, bloodstone, opal, hydrophane, flint and hornstone! Or that places together as another group of *rocks* (minerals are treated in a later section) orthoclase, albite, labradorite, mica, hornblende, asbestos, pyroxene, talc, soapstone, serpentine, chlorite, garnet, tourmaline. Igneous rocks are divided into trap rocks and volcanic rocks,—basalt, greenstone, porphyry, and amygdaloid being given as the trap rocks; trachyte and lava as the volcanic rocks. Thus basalt and lava are two separate rocks, belonging in different parts of the classification! Granite is still placed with the metamorphic rocks, and along with it goes syenite. It would be difficult to imagine a more hopeless confusion of names of chemical elements and minerals, specific rock names and general class names, than is here presented, as a standard to guide the teacher in his work. It would be most unfortunate did not the

flexibility of the syllabus permit every teacher to substitute something wholly different for this portion of the outline.

With all its imperfections, the syllabus represents a marked improvement in the standards for instruction in physical geography.

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THE INDUSTRIES OF THE ARGENTINE REPUBLIC.—The Argentine Republic is not, properly speaking, an industrial country, yet the extent of its territory, the fertility of its soil, and its climate make it probable that its industrial activity may be greatly increased. Beginning as a cattle-raising country in its first stage of civilization, it has continued to develop agricultural industry, and now the basis for a manufacturing country is being established. The trade in cattle and other animals, birds, fish, and the like, has been, and will continue to be for a long time, its principal medium of commerce with the rest of the world; but as the modes of traffic shall improve, its profit from other industries will also increase.

The agricultural industry constitutes the second stage of its civilization, and its combination with the cattle-raising industry will contribute to their mutual progress. The country's principal means of livelihood is the production of first-class animal and vegetable products in large quantities, enabling it to supply the nations that need them. Thus it may contend advantageously with such countries as do not possess immense table lands made fruitful by innumerable rivers, as in the Argentine Republic. Progress in the manufacture of such articles as are in greatest demand and which concern the necessities of life will operate for the advancement of such industries which require cheap labor, skillful operators, potent special machinery, and large amounts of money. A moderate protection to growing industries constitutes a temporary expedient only. The industrial progress of the country, therefore, depends on the increase of population—a lack which will be supplied by the lapse of time.

When coal and iron may be taken from its mines in large quantities, when electricity, obtained from its abundant rivers, shall be used throughout the country, and when its population shall have increased, the Argentine Republic will be a nation that will not only consume its own manufactured products, but will export them as well.

In the meantime, national industries, by reducing the price that is paid to foreigners for the importation of articles and by educating the people in the habit of working, produce one of the greatest benefits that the Argentine Republic could receive.

"Saladeros," in the Argentine Republic, is a name given to that industry whose object is the preparation of meat and other substances so that they may be preserved in good condition during long journeys. The first *"saladero"* was for the preparation of salted meats and was established in the beginning of the last century. Since then, this industry has been continually growing, and at present there are 15 establishments for the preparation of salted meats, canned meats, etc., and for this purpose from 400,000 to 500,000 young oxen are killed each year.

These *"saladeros"* are immense establishments situated on the edges of rivers or on the border of the sea. Great quantities of cattle are killed therein; their meat is salted and the refuse likewise utilized; the skins are also salted or otherwise prepared; the bones are boiled and subjected to dry heat in order to extract the grease, etc., and the cleaned bones, horns, blood and other remains are utilized, all these being exported to such manufacturing countries as are in need of and use them for the manufacture of various articles. These establishments also produce large quantities of salted meat, which is exported to Brazil and the West Indies; skins of various kinds that are sent to Europe; bones being exported in their normal condition or otherwise, as are the grease, fodder, oil, salted blood, horns, entrails, and various other items obtained from the remains of the animals.

—*Monthly Bulletin of the Bureau of American Republics.*

PROTECTION OF THE CHINCHILLA.—At the last session of the Chilean Congress, a bill was passed prohibiting the killing of chinchillas within a certain season and providing penalties for violation of the law. But the natural habitat of the chinchilla in the wilds of the Andes Mountains makes detection and convictions for violation of the law regulating their killing difficult, and it seems probable that this valuable fur-producing animal, like many other wild animals indigenous to the forests and mountains of North and South America, is destined to early extinction.

United States Consul Mansfield, of Valparaiso, writes that chinchilla skins, much prized and highly valued in the United States, England, and European countries because of their beautiful color and fine quality of the fur, are a product of Bolivia and Chile only.

The chinchilla is a small animal that burrows in the ground, and resembles in general appearance a rat, except in the coat, which is a beautiful silken light gray fur. It is found in the Cordillera ranges of the Andes in Chile and Bolivia, the best quality coming from the latter country. They are found in great numbers in the higher mountain ranges. But like all animals whose skins have a high market value, chinchillas have been

killed with impunity in season and out of season in recent years. As a result they are threatened with extinction.

They are captured in various ways, but the most common method is to hunt them with dogs, the fox terrier being the most useful and skillful in their capture. The rapid extermination of the chinchilla and the absolute lack of protection or regulation in taking them has resulted in a tremendous advance in the price of the skins in the past two years. As an evidence of the commercial interest in the fur produced by this little animal, two American and two French firms keep expert purchasing agents in the field during the shipping season—January to July. Coquimbo, Chile, is the chief port of export, that being the port of shipment for the Bolivian product also. Last year there were exported from Coquimbo, 12,000 dozen skins, the majority of which went to the United States, one agent shipping 7,150 dozen, and another 2,500 dozen to their respective New York houses. Prices last year were almost double those paid the year previous.

—*Monthly Bulletin of the Bureau of American Republics.*

CURRENT ARTICLES ON COMMERCE AND INDUSTRY.—

February:

Advertising and the Salesman, *System.*

Alaska, Transportation Methods in, (Ill.) *Nat'l Geog. Mag.*

Coal Tar and Its By-Products, *Business Man's Mag.*

Congo, The Truth About, *Outlook,* Feb. 27.

Cotton-Picking Machine (Ill.), *Moody's Mag.*

Fruit, Saving California's Crops (Ill.), *Century.*

Haiti: What Shall Haiti's Future Be? (Ill.), *World's Work.*

Insurance, Federal Supervision of, *Moody's Mag.*

Iron Ore Unloading by Machinery (Ill.), *Sci. Am.,* Feb. 10.

Irrigation: The Government as a Homemaker, *World To-Day.*

Land Fraud Investigation, The Kansas, *World To-Day.*

Meat Trade, World's, *Crop Reporter.*

Packers and the Cattlemen, *Sat. Evening Post,* Feb. 3, 10.

Packers: An Answer to Mr. Armour, *Sat. Evening Post,* Feb. 10.

Philippine Railroad Developments (Ill.), *Moody's Mag.*

Pineapple Raising in Southern Florida (Ill.), *Country Life in Am.*

Railroads and the President, *Century.*

Rug-Making Community (Center Lovell, Me.) (Ill.), *Country Life in Am.*

Sheep, The Peculiar Value of Dorset (Ill.), *Am. Farming.*

Trolley Car as a Social Factor (Ill.), *World To-Day.*

E. D. J.

THE KNOWLEDGE OF SUBJECT-MATTER FOR A TEACHER OF GEOGRAPHY.—It goes without saying that the teacher should be master of the subject-matter contained in the ordinary text-books used in the regular schools of the country. This preparation should have been made in a thorough, practical manner, if possible, under the direction of a skilled, resourceful teacher. This is necessary in order, (1) that his knowledge may be clear and positive—a part of himself rather than a mere acquisition to be used only when he has need of it in a recitation; (2) that his information on the subject may be systematically arranged in his mind; and (3) that he may have a good, practical method of presenting the same to others.

Again, his knowledge of political and mathematical geography should be supplemented by a thorough course in physical geography. This is necessary to enable him to give full and explicit instruction in such subjects as surface, drainage, nature of soils, productions, currents, climate, including temperature, moisture and winds, and many other topics directly or indirectly connected with or related to the general subject as presented in the ordinary text-book.

His preparation should include, further, a wide range of reading bearing on the general subject of the world and its people. He should be familiar through reading or travel, or better through both, with the characteristic features of different countries, such as topography, climate, nature of seasons, vegetation, productions, occupations, characteristics of people, manner of living, amusements, education, forms of governments, etc.

In addition to these things, he should have a wide range of information gained from a personal observation of geographical forms and phenomena. His book knowledge may be accurate and complete, but it can never be as vivid in his mind as that which comes to him from observation, neither can he teach those facts obtained from books with the same force and effectiveness as those which he has acquired from personal contact with nature. He should, therefore, be a student of nature. He should be familiar with the various forms of water, such as mist, sleet, rain, snow, hail, springs, creeks, rivers, ponds, lakes, gulfs, bays, straits, and the sea; he should know from observation something of the action of water in motion, in the way of erosion, the transportation of silt, and the work of the waves; he should be acquainted with marine life and its relation to the great marine formations. He should know from observation much of the land forms, as islands, capes, peninsulas, isthmuses, hills, mountains, mountain peaks, valleys, canyons, plains, plateaux. If it is impossible for him to see mountains or rugged canyons in their native beauty and grandeur, he should seek, within his own environment, for them in miniature, and from these let his imagination build

them up into the typical forms which they may be taken to represent; he should climb the hills and mountains, wander through the valleys, penetrate the silent forests, and in so doing study the myriad forms of vegetable and animal life. Not only this, but his observation and study of nature should be made with reference to use in the class room, that is, he should have an eye to cause and effect in geography and, in so far as possible, be able to trace the relations from one to the other. Moreover, he should study all from the comparative standpoint—geographical forms and phenomena should be compared and contrasted, and from these, conclusions should be drawn touching the general facts observed.

From the Study of Geography, Intermountain Educator.

U. S. Board on Geographic Names

Decisions—March 7, 1906

Alamogordo: Election precinct and town, Guadalupe county, N. Mex. (Not Alamo Gordo.)

Bancroft: Mountain, on the county line between Clear Creek and Grand counties (southern part of S. 29, T. 23, R. 74 W.) Colo. (Not Lomand's, Millar's, nor Perry Peak.)

Battie: Mountain, Camden town, Knox county, Maine. (Not Beattie nor Beatty.)

Boulder: Creek, Matanuska Valley, 40 miles northeast of Knik arm of Cook inlet, Alaska. (Not Schoonhoven nor Schoonoven.)

*Brewster: Precinct and town, Okanogan county, Washington. (Not Bruster.)

Chickawaukie: Pond, Rockland and Rockport towns, Knox county, Maine. (Not Cichicwaukie nor Chickawaka.)

Death Valley: Valley, Inyo county, California. (Not Amargosa Desert nor Lost Valley.)

Elbow: Lake, four miles east of mouth of Thunder Bay river, Alpena county, Michigan. (Not Carp nor Crooked.)

*Hankow: Capital, province of Hupeh, China. (Not Hankau.)

Kings: Mountain on the east bank of Matanuska river, 40 miles northeast of Knik arm of Cook inlet, Alaska. (Not House.)

Lilly: Pond, Rockport town, Knox county, Maine. (Not Fresh nor Lily.)

Little Nesenkeag: Brook, tributary from the east to Merrimack river, Hillsboro county, N. H. (Not Chase's, Chases, Massenteean, Mossenteean, nor Reed's.)

*Reversal of former decision

Monroe: Island, southeast of Rockland, Knox county, Maine. (Not Munroe.)

Nesenkeag: Brook, tributary from the east to Merrimac river, Hillsboro county, N. H. (Not Brickyard, Chase, nor Great Nesenkeag.)

*Newchwang: Treaty port, province of Liaotung, China. (Not New-Chwang, Niu-chuang, Niu-Chwang, Niuchwang, nor Niutschuan.)

Sangerfield River: Branch of Chenango river, Chenango, Madison, and Oneida counties, N. Y. (Not Chenango Creek, East Branch Chenango River, nor East Chenango River.)

Shandon: Railroad station and village, Butler county, Ohio. (Not Glendower, New London, nor Paddy's Run.)

Soochow: City, China. (Not Soo-Chow-Foo, Soo-Tchoo, Sou-Tcheou-Fou, Su-chau, Su-Chew, Su-chow, nor Su-Chow.)

Talkeetna: Mountains and river, north of Cook inlet, on the east side of Sushitna river, Alaska. (Not Talkeet, Talkeetno nor Talkütna.)

Tee: Cove or harbor, Lynn canal, southeastern Alaska. (Not Stephens.)

Tulula: Creek, tributary to head of Cheoah river, and town, Graham county, N. C. (Not Tallulah.)

Walhalla: Plateau, Coconino county, Arizona. (Not Greenland nor Valhalla.)

Winooski: River, tributary from the east to Lake Champlain, Chittenden and Washington counties, Vermont. (Not Onion.)

PHYSIOGRAPHY AND GEOGRAPHY—THEIR RELATIONS, DIFFERENCES AND ESSENTIAL FIELDS.†—Theoretically, it is conceded that geography shall be taught in the grades and physiography in the high schools, but practically both are taught more or less all the way through. Hence, many do not see the boundary line which separates these two sciences. I speak of the subjects in the public schools only, because at present they are best known as parts of public school curricula, not because I believe they are or should be confined to these stages. Neither do I object to the above mentioned lack of differentiation in the elementary teaching.

Pupils came to us in the colleges and universities totally blind, as have been their teachers before them, to any real distinction between geography and physiography. The idea seems to prevail that the former includes the latter. Undoubtedly the use of the name physical geography for the latter cultivates the notion. Truly they are related but not quite in that way.

*Reversal of former decision

†Read at the Cincinnati Meeting, Ohio St. Acad. of Sci., Dec. 2, 1905.

Physiography, if not able to go alone, is more properly considered a corporate part of geology. What then is the relation existing between these two sciences? Can one be studied without the other? Which one should receive attention first? Are they so related that they may be concurrently studied?

These questions will be discussed in inverse order. In elementary work the pupil's interest centers in, and radiates from, the human or life element. So in his geography he finds man harvesting grain with a cradle in Vermont, with a two or three-horse reaper in Ohio and a steam header in Southern California, and he asks why. The answer comes in noting the topography, soil, and climate, and the condition of, and uses for, the straw. He incidentally learns something of the physiography of the places studied in order to explain the relations and responses which he has found. He reads of the arid climate of the Great Plains and then discovers the influence of the Rockies in producing the aridity, and ultimately comes to appreciate several points about mountains. He finds the railroads coming into Indianapolis and Columbus from all directions while they enter Cincinnati, Albany and Helena from only three or four. The teacher calls attention to the topography and he learns facts about plains and prairies, about mountains, passes and valleys. But through it all he is studying geography, not physiography. He is using simple, physiographic facts to explain and answer geographic questions. It is time enough to introduce the physiographic when the geographic requires it.

Again, when in physiography he studies the life history of a plateau and traces the feature from its geotectonic uplift through the steps of its dissection and ageing, watching its valleys first deepen, then widen, and its level topped divides melt away to crests with long slopes, while the valley floors widen to occupy half or two-thirds of the region, he may incidentally note that the population and highways occupy the tops of the hills—the plateau surface—in youth, that the culture descends the slopes as the valleys mature, and that in maturity transportation routes, cities, and most of the people are in the valleys while the hill tops are left to pasture or forest. To sum up, a few facts in either science are gathered in the pursuit of the other, but the two subjects do not develop concurrently.

To the second question, "which should receive the attention first," the answer depends upon the age and maturity of the pupil. If a child, geography first everytime. If a mature student, he may well prepare for geography by a strong course in physiography; but the phenomena, reasoning, and philosophy of the latter are far beyond the experience and power of the child, to say nothing of the locus of his interest.

The remaining question, "can one be studied without the other," has

been at least partly answered. In physiography, one does not need to learn many facts of geography, and he certainly ought not to follow up the relations to man and his responses to the influence of the conditions, far enough to detract from the systematic development of his subject. In geography, he uses the facts of this related science as he does those of history, sociology and anthropology, but he does not attempt to grasp its philosophy.

Turning to the second division of the subject, "their differences" it is apparent from what has preceded that they often deal with the same features and phenomena. They seem in many topics to use the same basal materials but in a different way. For illustration—in physiography the valley is a topic. It is described, its origin and the evolution of its parts are discussed. Its development is traced and a definite age is ascribed to it. Its end is predicted. Its genetic relation to the surrounding region is discussed. In geography, the same valley is noted as a control of the movements of men and goods, as a home for a state, clan or a certain group of men, or as the seat of adapted industries. Its commercial or economic relations to the surrounding region are noted.

Another illustration is furnished by the river. In physiography, its course through the valley and the regional topography is considered; the work accomplished in its normal development; its method of procedure in carving its valley, enlarging its curves, extending its course, and broadening its territory; its relation to other streams, to lakes or the ocean. But in geography the transportation facilities offered, the power made available, the possibilities for irrigation, city water supply, and park and scenic uses, these are the subtopics. Its location, whither it leads, what cities on its banks and why; the inter-relation and the inter-action of man and the river, there are its interests. In a similar way the plain and mountain, the sea and shoreline receive different treatment in the course of the development of the two subjects.

These sciences, however, are not different from others in this respect; for chemistry, geology and physics all deal with matter and natural forces, and history, economics, and sociology all study man's institutions.

The difference between geography and physiography is one of point of view. Physiography concerns itself with the description, and the classification of physiographic forms on the basis of the cycle, process or the family; geography with the relations of these same forms to man. In the former the principle is systematization; in the latter, relation. For example, take a plain. In physiography its characteristics are listed, its origin is determined, its age in its normal cycle of development, the processes in operation upon it, and its relation to the surrounding topographic

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features. A comparison with other plains is made and the types are discussed until the specific feature, say the coastal plain of Alabama and Mississippi, has been referred to its type and class, to its variety and age. It may be called a belted coastal plain, submaturely dissected in its inland portion and less dissected and slightly drowned along the coast. Systematization is the objective.

In geography the same plain comes up as the home of the cotton growing industry. The especial adaptations to this business and to others are discussed; the features of the plain to which transportation responds, the location of its cities, roads and ports, the distribution of its crops and minerals, population and industries are shown to be related to its levelness, its belted structure, its stage of dissection, and the position of its harbors and other commercial outlets. In all these points it may be compared with other plains. In these *relations* centers the interest, and through their recognition comes the gain to the student.

This essential difference appears early in the study but becomes clearer as each subject emerges from the high school curriculum. Beginnings are made, and some facts learned, but the complete organization of the truth pertaining to the science cannot be accomplished in elementary schools nor by immature pupils. Just as nature study introduces the plant and animal kingdoms to the child and high school zoology and botany continue to familiarize him with them, so as to pave the way for college and university research into the fundamental principles of the sciences of zoology and botany; so nature study, and subsequently geography and physiography, supply basal conceptions for the extended quest for knowledge in the separate sciences of our subject.

We are now prepared for a brief treatment of the third division of the subject, "their essential fields." We have gone far enough already to begin to see the scope of each. Physiography describes, classifies, and discusses the origin of the features of the earth. It compares similar and dissimilar, related and unrelated forms, always seeking to reduce the multitudinous variety to a system, to group likes and correlate related specimens. It concerns itself with the physiographic processes and forces of the earth, air, and sea and endeavors to explain all the workings of all, and to understand the nature of all physiographic features. Such a field and purpose constitute physiography a science. They proclaim it to have problems, easy and hard, short and long, solved and unsolved, and I may say, solvable and unsolvable. All this means, further, that the elementary introduction, which the high school boy receives, to the general subject does not acquaint him with the science. It only puts him in touch with

some of its facts and theories, and enables him to see and work out for himself, other truths; or to pursue the subject more at length in the University.

And geography possesses a field more biotic, anthropic, and industrial but centering in the relation of the anthropic phenomena to the physiographic. It seeks to discover all responses of mankind to his physical environment; to show how human industries are related to the distribution of natural resources and to the facilities for moving and marketing them; to show why man lives where he does and as he does so far as these depend upon the physiographic, climatic, and geographic conditions or upon the distributions of natural features or phenomena; to trace his institutions, the elements of his character and the nature of his aspirations as far as they are related to the physical surroundings; and, having accumulated all these data, to reduce them to systems, and to organize them into laws and principles. Geographers have been working in this field for two milleniums and a vast body of material has been collected. Much of the material has been classified; laws have been found, principles discovered, and, to-day, one of the oldest of sciences is again finding itself.

Here, too, only beginnings are mastered in the elementary schools. In subject-matter, both quality and quanity, and in method of treatment and philosophy, geography in its higher phases is a university subject. Universities in France, Germany, Austria and to some extent in other countries, have prepared for the study of geography in their courses. Two or three American Universities give some systematic instruction in advanced geography. Many more should and, I trust, will, if for no other reason than the utilitarian, the preparation of teachers for elementary and secondary schools and the equipment of men for business, diplomatic, and government positions where a knowledge of the principles of geography is of inestimable value.

To sum up, then, physiography and geography are two distinct sciences. They each contribute to the full appreciation of the other; especially does the former minister to the latter. They often deal with the same basal materials, but not in the same way nor to the same end. Physiography describes and classifies physiographic features and discusses the processes and agencies by which they are made. Geography shows the relations existing between man and his physical environment and classifies the influences and responses.

Geo. D. Hubbard, Ohio Naturalist, Jan., 1906.

PEARLS FROM LOWER CALIFORNIA.—The quaint little old seaport of La Paz, at the extreme Southern tip of the peninsula of Lower California,

is still the most important pearl fishing community on the Pacific Coast of America, and among the three most important towns for pearl fisheries in the world, says a writer in the New York Times. Manuel Aguilea Menendez, Governor of the Mexican Territory of Lower California, recently reported to the Governor at the City of Mexico that La Paz's product of pearls for the last year was $2,145,000. The largest and finest pearls found anywhere in the last few years have come from the fisheries in the Gulf of California, which have their headquarters at La Paz. The gems are taken directly from La Paz to lapidaries and wholesale dealers in the City of Mexico, New York and Paris.

For centuries the waters in the vicinity of La Paz have been scenes of pearl fishing operations. Fortuno Ximines, a lieutenant of Hernando Cortez in the conquest of Mexico, was the discoverer of La Paz. That was in 1522. Ximines's diary is still at Vera Cruz and in it he tells of finding aboriginal chiefs living in rude wickiups along the seashore, with quantities of valuable pearls lying carelessly about. The Spanish believed that pearl fishing had been conducted in the Gulf of California (known then as the Gulf of Cortez) for untold generations. From one tribe of aborigines along the gulf shore near Hermosillo the conquerors wrung ransoms in pearls worth many thousands of dollars.

La Paz has a population of about 2,500. Four-fifths of them are Mexicans, and the rest are French, Americans and Germans, drawn there by the pearl fisheries. The town is huddled close upon the water's edge, and with its crude old stone and adobe houses, its tile roofs, its plaza with tropical trees, gorgeous flower beds, under perennial sunny skies, and narrow winding streets, is a picturesque resort. The French and American firms and companies that deal in pearls and oyster shells have large, ancient warehouses with thick walls and iron-grated windows. Within the warehouses are tons of oyster shells waiting shipment to Europe and the United States, vast quantities of diving garments and accouterments and stores for the fishing crews. The pearls are kept in queer old iron safes, which in turn are stored in vaults. Years ago, before Hermosillo became a rival in the pearl trade, La Paz was a bustling community. Now it is a sleepy place, where the only events that ever arouse it are the going out and coming in of the fishing crews. The sole topic of conversation in La Paz concerns pearls and the market for pearl oyster shells. Nowadays the market for pearls is the very best.

The pearl fishing season along the inner shore of Lower California almost always lasts through July, August, September and October. The season on the Pacific Coast side of Mexico and Central America usually

begins in March and closes when the season of sudden whirlwinds and hurricanes (so common in the tropics) begins in June. The pearl fishers are the divers, who go down on the floor of the sea and gather together the shells of the mollusks. The pearl hunters are a more numerous set of men (usually old men who have grown feeble and useless physically in the diving). They work in long open sheds along the shore, close by the companies' respective offices and under the watchful eye of an overseer. The pearl hunter opens carefully each shell, examines it closely, all the time using his fingers for feeling for the precious pearl. The gems are so rarely found that only thirty or forty little pearls and possibly one the size of a pea, are found sometimes in two tons of shells. To harvest a ton of pearl-bearing oyster shells takes several divers two or three weeks. The pearl is formed either by the intrusion of some particle that irritates the oyster, causing it to cover the irritant with a coat of nacre, which, when hardened, becomes the pearl, or, as many divers believe, by a parasite, for it has been found that old shells bored throughout by these parasites contain the largest and finest pearls. The pearl is found imbedded in the oyster, and not, as many suppose, attached to the shell.

The pearl oysters are not found in beds like edible oysters, but are scattered singly over a large area, the diver sometimes having to walk many miles before filling his wire basket. The shells are about the size of small soup plates, weighing about a pound each, and shaped much like our oyster shell, only more round. Sometimes in grasping a shell the hand of the diver comes in contact with a stone fish, so named by the divers, a venomous little fish, hiding under rocks and shells and secreting poison. This fish punctures the skin of the hand, causing the entire arm to swell, with great pain. The remedy is to remain below and suffer, for the pressure of the water causes the wound to bleed freely and the poison thus escapes.

As in gold-mining camps, there are days of excitement because of unusually rich finds of pearl-bearing oysters. A fishing fleet may come in from a new locality with an abundance of valuable pearls, and, under strict orders of the company operating them, will keep the location a secret. But rival companies are bound to find, in some of their numerous ways of learning such secrets, the spot where the pearls have been found. At once there is a stampede there of companies and individual pearl fishers. Sometimes there are rows among the fishers concerning the priority of rights to fish for pearl-bearing oysters in these waters, and one hears at La Paz many a grewsome tale of this or that person or crew who went out from La Paz to invade another person's or crew's fishing domain and never came back.

A few years ago the value of pearls taken in La Paz caused a rush to the ground equaling that of the gold fields. One pearl weighed seventy-five carats, and was sold for $14,000; another, perfect in shape and finely tinted, brought $5,000. One of the largest pearls found here in the last century brought $50,000. One of the best years for pearls in modern times was 1881, in which a black pearl was found of twenty-eight carats' weight, which brought $10,000 in Paris. In 1882 two were found weighing thirty-one and forty-five carats, which realized $11,000. In 1883 a light brown pearl was found which weighed sixty-five carats, and sold for $8,000, while a pear-shaped pearl brought $7,500.

A teacupful of pearls and about 3,500 tons of shells is a profitable year for the largest pearl fishing companies at La Paz. The oyster shells are sold to buyers for French, Dutch and New England button factories. One firm at Brussels has a standing order for 2,000 tons of mollusk shells of certain variety each year. A teacupful of pearls of the average size comes to about $19,000. But in such quantity of gems there will very likely be a dozen or twenty pearls of extra fine color and rare size, so that the value of the season's work is enhanced $20,000 or $30,000. The colors of the pearl in the Gulf of California are white, blue, black and green, and the best nowadays are worth from $1,000 to $4,000 each. The finest pearl found is a black pearl of seventeen carats' weight. The green and blue pearls are not found in all the fisheries in the world.—*Modern Mexico,* January, 1906.

NEWS ITEMS

Owing to the recent appalling calamity in San Francisco, no meeting of the National Educational Association will be held this year. Cheap excursions to the Pacific coast, including all expenses, will, however, be arranged by certain of the Eastern railroads. These excursions will include the Grand Canyon, Colorado, Central California, Portland and the Yellowstone.

The article on geography equipment announced for this number of the JOURNAL has been postponed until June on account of lack of space.